

10/594946

21000 PCT/PTO 29 SEP 2006

# ARTICLE 34 AMENDMENTS

## 5. Content of Amendment

Claims 1, 2, and 12 are canceled. "The road view analyzing apparatus according to claim 2, wherein said analyzing means includes:....an image in an upper area of the four areas." in Claim 3 is amended to "A road view analyzing apparatus having a camera mounted on a vehicle to photograph a view in front of the vehicle, for analyzing a road view indicated by an image of the view in front of the vehicle photographed by the camera, the road view analyzing apparatus comprising: image dividing means for dividing the image of the view in front of the vehicle photographed by the camera into plurality of areas with diagonal lines; and analyzing means for separately analyzing content of the image in each of the plurality of areas, wherein said analyzing means includes: road view analyzing means for applying road analysis processing to an image in a lower area of the plurality of areas; scene analyzing means for applying scene analysis processing to an image in each of left and right areas of the plurality of areas; and background analyzing means for applying background analysis processing to an image in an upper area of the plurality of areas." Claims 13 to 16 are added.

## 6. List of Attached Documents

- (1) Pages 16 to 21 of claims.

## Claims

1. (Canceled)
2. (Canceled)
3. A road view analyzing apparatus having a camera mounted on a vehicle to photograph a view in front of the vehicle, for analyzing a road view indicated by an image of the view in front of the vehicle photographed by the camera, the road view analyzing apparatus comprising:
  - image dividing means for dividing the image of the view in front of the vehicle photographed by the camera into a plurality of areas with diagonal lines; and
  - analyzing means for separately analyzing content of the image in each of the plurality of areas, wherein said analyzing means includes:
    - road view analyzing means for applying road analysis processing to an image in a lower area of the plurality of areas;
    - scene analyzing means for applying scene analysis processing to an image in each of left and right areas of the plurality of areas; and
    - background analyzing means for applying background analysis processing to an image in an upper area of the plurality of areas.
4. The road view analyzing apparatus according to claim 3, wherein said road analyzing means includes:
  - means for recognizing a white line on a road in accordance with the image in the lower area to calculate an approximate straight line of the white line;
  - means for measuring a linear distance of the approximate straight line;
  - means for measuring a lane width in accordance with the approximate straight line; and
  - means for recognizing a road surface state in accordance with the image in the lower area.
5. The road view analyzing apparatus according to claim 3, wherein said scene analyzing means includes:
  - means for detecting a green ratio and a blue ratio of the image in each of the left and the right areas to estimate a ratio of a forest and a sea;
  - means for detecting a color distribution of the image in each of the left and the right areas; and
  - means for performing fractal dimension analysis for the image in each of the left and the right areas.
6. The road view analyzing apparatus according to claim 3, wherein said background analyzing means includes:
  - means for detecting a blue ratio of the image in the upper area to estimate a ratio of a blue sky;
  - means for detecting a color distribution of the image in the upper area to estimate a background main object; and
  - means for measuring a distance to the background main object.
7. The road view analyzing apparatus according to claim 3, wherein said analyzing means includes:
  - means for setting indexes of a plurality of road characteristics, respectively, in accordance with a result of the road analysis processing;
  - means for setting indexes of a plurality of scene

characteristics, respectively, for each of the left and the right areas in accordance with a result of the scene analysis processing;

means for setting indexes of a plurality of background characteristics, respectively, in accordance with a result of the background analysis processing;

means for calculating an average value of the indexes of the plurality of road characteristics as road comfortableness;

means for calculating an average value of the indexes of the plurality of scene characteristics as scene comfortableness on the left and the right for each of the left and the right areas;

means for calculating an average value of the indexes of the plurality of background characteristics as background comfortableness; and

means for calculating an average value of the road comfortableness, the scene comfortableness on the left and the right, and the background comfortableness.

8. The road view analyzing apparatus according to claim 7, wherein said analyzing means includes document data creating means for creating document data including a road characteristic of a maximum value of the indexes of the plurality of road characteristics, a scene characteristic of a maximum value of the indexes of the plurality of scene characteristics, and a background characteristic of a maximum value of the indexes of the plurality of background characteristics.

9. The road scene analyzing apparatus according to claim 7, wherein the plurality of road characteristics are linearity of a road, cleanness of a road surface, and a breadth of a road width,

the plurality of scene characteristics are a ratio of a forest and a sea, sparseness of advertising boards, and complexity, and

the plurality of background characteristics are a blue sky ratio, sparseness of signboards, and openness.

10. The road scene analyzing apparatus according to claim 1, further comprising:

means for judging whether an obstacle is present in the image of the view in front of the vehicle photographed by the camera; and

means for activating said image dividing means and said analyzing means when the obstacle is not present in the image of the view in front of the vehicle.

11. The road view analyzing apparatus according to claim 10, wherein the obstacle is a vehicle.

12. (Canceled)

13. (Added) A road view analyzing apparatus having a camera mounted on a vehicle to photograph a view in front of the vehicle, for analyzing a road view indicated by an image of the view in front of the vehicle photographed by the camera, the road view analyzing apparatus comprising:

image dividing means for dividing the image of the view in front of the vehicle photographed by the camera into a plurality of areas; and

analyzing means for separately analyzing content of the

image in each of the plurality of areas,

wherein said image dividing means applies white line recognition to the image of the view in front of the vehicle and sets an area up to a white line in the outermost part by the white line recognition as a road area.

14. (Added) The road view analyzing apparatus according to claim 13, wherein said image dividing means calculates a moving distance from an amount of change between the image of the view in front of the vehicle photographed by the camera and an image of a view in front of the vehicle photographed temporally earlier than the image and applies a threshold to the moving distance to obtain sectional areas of a scene area and a background area.

15. (Added) A road view analyzing method of analyzing a road view indicated by an image of a view in front of a vehicle obtained by photographing the view in front of the vehicle, the road view analyzing method comprising:

an image dividing step of dividing the image of the view in front of the vehicle into a plurality of areas with diagonal lines; and

an analyzing step of separately analyzing content of the image in each of the plurality of areas,

wherein said analyzing step includes:

a road view analyzing step of applying road analysis processing to an image in a lower area of the plurality of areas;

a scene analyzing step of applying scene analysis processing to an image in each of left and right areas of the plurality of areas; and

a background analyzing step of applying background analysis processing to an image in an upper area of the plurality of areas.

16. (Added) A road view analyzing method of analyzing a road view indicated by an image of a view in front of a vehicle obtained by photographing the view in front of the vehicle, the road view analyzing method comprising:

an image dividing step of dividing the image of the view in front of the vehicle into a plurality of areas with diagonal lines; and

an analyzing step of separately analyzing content of the image in each of the plurality of areas,

wherein in said image dividing step, white line recognition is applied to the image of the view in front of the vehicle and an area up to a white line in the outermost part by the white line recognition is set as a road area.